

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A sharpening unit ~~(50)~~ for a blade ~~(19)~~, comprising a grinding wheel unit ~~(80, 280)~~ with at least two grinding wheels ~~(51, 53, 251, 253)~~ opposed to act on two sides defining a cutting bevel of said blade ~~(19)~~, ~~characterized in that~~ wherein said grinding wheel unit is freely ~~moving~~ movable according to at least a first degree of freedom to center the grinding wheels ~~(51, 53, 251, 253)~~ in respect ~~of~~ to a lying surface of a portion of the cutting bevel of the blade ~~(19)~~ on which said grinding wheels act.

2. (Currently Amended) Sharpening unit as claimed in claim 1, ~~characterized in that it comprises~~ further comprising a system ~~(65, 67, 69)~~ to move the grinding wheel unit towards the blade along a direction ~~(f63)~~ of forward movement.

3. (Currently Amended) Sharpening unit as claimed in claim 1 or 2, ~~characterized in that~~ wherein said grinding wheel unit is provided with a partly restricted movement according to a second degree of freedom to center said grinding wheels in respect ~~of~~ to said lying surface.

4. (Currently Amended) Sharpening unit as claimed in claim 3, ~~characterized in that~~ wherein said grinding wheel

unit can oscillate about an axis of oscillation ~~(C-C)~~ disposed in an intermediate position between ~~the~~ axes of rotation ~~(A1-A1, A2-A2)~~ of the grinding wheels ~~(51, 53, 251, 253)~~, ~~the possibility to move and wherein movability~~ about said axis of oscillation ~~constituting~~ constitutes said second degree of freedom.

5. (Currently Amended) Sharpening unit as claimed in claim 4, ~~characterized in that~~ wherein said axis of oscillation ~~(C-C)~~ lies essentially on a lying plane of the portion of the cutting bevel of the blade on which said grinding wheels act, or on a plane that approximates a lying surface of said portion of the cutting bevel of the blade.

6. (Currently Amended) Sharpening unit as claimed in ~~at least claims 2 and 4, characterized in that~~ claim 2, wherein said direction of forward movement ~~(f63)~~ of the grinding wheel unit is parallel to ~~the~~ an axis of oscillation ~~(C-C)~~ of the grinding wheel unit ~~(80, 280)~~.

7. (Currently Amended) Sharpening unit as claimed in claim 4, ~~5 or 6, characterized in that~~ wherein said grinding wheels ~~(51, 53, 251, 253)~~ are disposed ~~in an~~ essentially ~~symmetrical way in respect of~~ symmetrically to said axis of oscillation ~~(C-C)~~.

8. (Currently Amended) Sharpening unit as claimed in ~~one or more of the previous claims, characterized in that~~

claim 1, wherein said grinding wheel unit ~~(80, 280)~~ is freely movable along a direction of translation ~~(f81, f281)~~ not parallel to the lying surface of the portion of said cutting bevel on which said grinding wheels act, ~~the wherein~~ movement along said direction of translation ~~constituting~~ constitutes said first degree of freedom.

9. (Currently Amended) Sharpening unit as claimed in claim 8, ~~characterized in that~~ wherein said direction of translation is ~~essentially~~ approximately orthogonal to said lying surface.

10. (Currently Amended) Sharpening unit as claimed in ~~at least claims 4 and 8 or 4 and 9, characterized in that~~ claim 4, wherein said axis of oscillation ~~(c-c)~~ is orthogonal to ~~the~~ a direction of translation ~~(f81, f281)~~ of the grinding wheel unit.

11. (Currently Amended) Sharpening unit as claimed in ~~at least claim 4, characterized in that~~ claim 4, wherein ~~the center of gravity of said grinding wheel unit (80, 280) has~~ a center of gravity which lies on said axis of oscillation ~~(c-c)~~.

12. (Currently Amended) Sharpening unit as claimed in ~~at least claim 8, characterized in that~~ wherein a counterweight moving along said direction of translation ~~(f81, f281)~~ is associated with said grinding wheel unit ~~(80,~~

~~280~~), linking means ~~(103)~~ being provided to force the counterweight to move in ~~the opposite~~ a direction opposite to said grinding wheel unit along said direction of translation.

13. (Currently Amended) Sharpening unit as claimed in ~~at least claim 4, characterized in that~~ wherein said grinding wheel unit is stressed in a predetermined angular position in respect ~~of~~ to said axis of oscillation ~~(C-C)~~.

14. (Currently Amended) Sharpening unit as claimed in ~~one or more of the previous claims, characterized in that~~ claim 4, it comprises further comprising means to bring said grinding wheels alternately into an operating position and into a non-operating position.

15. (Currently Amended) Sharpening unit as claimed in ~~at least claims 3, 8 and 14, characterized in that~~ claim 14, wherein said means comprise an actuator ~~(357)~~ that produces a movement of oscillation of the grinding wheel unit ~~(281)~~ around said axis of oscillation ~~(C-C)~~ to move the grinding wheels ~~(251, 253)~~ against the blade in said operating position and hold ~~them~~ the grinding wheels in contact with ~~it the blade~~, and ~~in that~~ wherein said grinding wheel unit ~~(281)~~ is free to translate along ~~said~~ a direction of

translation ~~(f281)~~ to become centered in respect ~~of~~ to the blade.

16. (Currently Amended) Sharpening unit as claimed in claim 15, ~~characterized in that~~ wherein a control element ~~(351-365)~~ operated by said actuator is associated with said grinding wheel unit, to act on the grinding wheel unit to move the grinding wheels against the blade and bring ~~them~~ the grinding wheels into ~~an~~ said operating position, said control element being irreversible, ~~the~~ with stress exerted by the blade on the grinding wheels not producing ~~the~~ an opposite movement to ~~the~~ movement ~~to bring~~ bringing the grinding wheel against the blade.

17. (Currently Amended) Sharpening unit as claimed in claim 16, ~~characterized in that~~ wherein said control element comprises a slider ~~(351)~~ rotating around ~~its~~ an axis ~~(D-D)~~ of the slider controlled by said actuator, and a mechanism ~~(361, 363, 365)~~ that produces axial sliding of said slider in a support ~~(351)~~ when said slider is made to rotate around ~~its~~ said axis by said actuator, said axial sliding of the slider producing rotation of the grinding wheel unit in ~~the~~ a direction to move the grinding wheels ~~(251, 253)~~ against the blade ~~(19)~~.

18. (Currently Amended) Sharpening unit as claimed in ~~at least claims 4 and 7, characterized in that~~ claim 4,

wherein said grinding wheel unit ~~(80, 280)~~ further comprises a plate ~~(87, 287)~~ rotatably supported around said axis of oscillation ~~(C-C)~~ by a slide ~~(81, 281)~~ sliding along a sliding guide ~~(79)~~ parallel to ~~said~~ a direction of translation ~~(f81, f281)~~.

19. (Currently Amended) Sharpening unit as claimed in ~~at least claims 2 and 18, characterized in that~~ claim 18, wherein said sliding guide is carried by a carriage ~~(63)~~ moving along said direction of forward movement ~~(f63)~~ of the grinding wheel unit ~~(80, 280)~~.

20. (Currently Amended) Sharpening unit as claimed in ~~at least claim 4, characterized in that it comprises~~ further comprising an angular position sensor of the grinding wheel unit in respect of to said angle of oscillation ~~(C-C)~~.

21. (Currently Amended) A cutting machine for cutting elongated products[[,]] comprising[[[:]] at least ~~a~~ one path for the products to be cut ~~(L)~~; at least ~~a~~ one device ~~(3, 5)~~ to feed the products along said at least one path; at least ~~a~~ one blade ~~(19)~~ provided with a cutting movement to cut said products; at least ~~a~~ one sharpening unit ~~(50)~~ for said at least one blade, which comprises a grinding wheel unit ~~(80, 280)~~ with at least two grinding wheels ~~(51, 53, 251, 253)~~ opposed to act on said at least one blade ~~(19)~~,

~~characterized in that~~ wherein said sharpening unit is made according to ~~one or more of the previous claims~~ claim 1.

22. (Currently Amended) Cutting machine as claimed in claim 21, ~~characterized in that~~ wherein said grinding wheel unit is oscillating around an axis of oscillation ~~(c-c)~~ essentially orthogonal to ~~the~~ a direction of feed of the products to be cut along said at least one path.

23. (Currently Amended) Cutting machine as claimed in claim 21 or 22, ~~characterized in that~~ wherein said grinding wheel unit ~~(80, 280)~~ is free to translate along a direction of translation ~~(f81)~~ essentially parallel to the direction of feed ~~(fL)~~ of the products to be cut ~~(L)~~.

24. (Currently Amended) Cutting machine as claimed in ~~at least one or more of claims 21 to 23, characterized in that~~ claim 21, wherein said at least one blade ~~(19)~~ is a disk-shaped blade rotating around a respective axis ~~(B-B)~~, carried by a unit ~~(17)~~ rotating around its axis of rotation ~~(A-A)~~.

25. (Currently Amended) Cutting machine as claimed in claim 24, ~~characterized in that~~ wherein said ~~at least one~~ disk-shaped ~~rotating~~ blade ~~(19)~~ is provided with an alternate movement essentially parallel to ~~the~~ a direction of feed of the products to be cut and ~~in that~~ further comprising a counterweight ~~(101)~~ is associated with said

grinding wheel unit ~~(80, 280)~~ moving along ~~said~~ a direction of translation, and connection means ~~(103) being provided~~ to force the counterweight to move in the a ~~opposite~~ direction opposite to said grinding wheel unit along said direction of translation.

26. (Currently Amended) Cutting machine as claimed in ~~one or more of claims 21 to 25, characterized in that~~ claim 21, wherein two sharpening units are associated with said at least one blade.

27. (Currently Amended) Cutting machine as claimed in claim 26, ~~characterized in that~~ wherein a first one of said two sharpening unit units has idle grinding wheels and a second one of said two sharpening unit units has motorized grinding wheels, ~~the said idle grinding wheels of the first unit and the motorized grinding wheels of the second unit~~ having different inclinations in respect ~~of~~ to said blade.